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THE FUTURE OF MARS CARTOGRAPHY

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A new era for Mars Cartography has begun with the buildup of Mars Global Surveyor (MGS) Mars Orbiter Laser Altimeter (MOLA) global coverage. MOLA produces 70,000 precision altimetry points per orbit with over 12 orbits per day. To date, over 0.3 billion points have been obtained, each point individually having positional accuracies of < 400 m in latitude and longitude and < 50 m in altitude. Increased accuracy is further obtained by constraints imposed by millions of orbit crossings and the simultaneous solution for orbit and gravity with radio science tracking. Future Mars cartographic products will be controlled in all three position components to the MOLA dataset, giving 2 orders of magnitude improvement in existing map products. Image datasets to register and map project to the MOLA base include existing Mariner and Viking Orbiter (10-200 m/pixel), and from MGS MOC (250 m/pixel or 1-5 m/pixel). The next major step in Mars cartography will come in 2004 from the Mars Express High Resolution Stereo Camera (10 m/pixel). Such precision MOLA-based maps have already been produced to support the MPL/DS2 landing.

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